Safety Interlock Switches

TL4019

Safety Interlock Switch with Guard Door Locking

- High locking force of 1,200 N (270 lb.) locks guard door shut until machine is safe to enter
- IP67 (NEMA 6) enclosure enables the TL4019 to withstand water washdown
- Door and lock monitoring—the TL4019 has a total of 4 contacts: 2 N/C safety + 1 contact for door position monitoring + 1 contact for lock monitoring
- Rear manual release—allows unlocking of switch from inside of guarded area per ANSI/RIA R15.06
- Narrow profile enables mounting to 2 in. square tubing or in applications with space restrictions
- Rotatable head—the rotatable head of the TL4019 provides 8 actuator entry positions to satisfy most installation requirements
- Optional key release—this option on power-to-unlock models allows manual unlocking of the guard door
- Optional slide bolt with integral door handle aids installation on sliding and swinging guard doors
- A Rapid Delivery Product: Select models are available for shipment today or within 3 to 5 days

Conforms to EN60947-5-1, EN1088, EN ISO 13849-1
UL and C-UL listed
DGUV approved

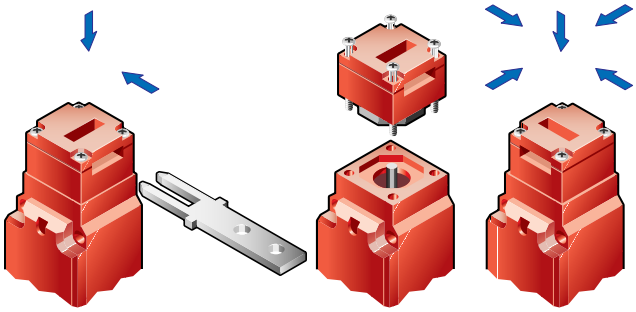
Specifications

Electrical	**All Models**	**TL4019-1 & -2**	**TL4019-3 & -4**	**TL4019-5**
Safety Contacts:		2 N/C	2 N/C	1 N/C
Auxiliary Contacts:		2 N/O	1 N/O + 1 N/O 1 N/O + 1 N/C 1 N/C + 1 N/O	1 N/C + 1 N/O
Switching Ability	AC: 230 V – 4 A			
	DC: 24 V – 4 A			
Safety Contact Material:	Silver alloy with gold flash			
Minimum Current:	24 V 1 mA			
Solenoid Supply Voltage:	24 VAC/DC or 110 VAC (all -15% / +10%)			
Solenoid Power:	8 W			
Solenoid Rating:	100% duty			
Mechanical				
Mounting:	Any position			
Mounting Hardware:	4 x M5 screws (not supplied)			
Min Operating Radius:	Approximately 100 mm (3.9 in.) with flex actuators			
	Approximately 1000 mm (39 in.) with flat and 90-degree actuators			
Max Holding Force:	1200 N (270 lb.)			
Max Actuation Speed:	20 m/min.			
Case Material:	Reinforced thermoplastic			
Actuator Material:	Stainless steel			
Wiring Entry:	3 x M20 conduit with 0.5 in. NPT adapter			
Weight:	500 g (17 oz.)			
Color:	Red			
Mechanical Life:	1 x 10^6 minimum			
Environmental				
Protection:	IP67 (NEMA 6)			
Operating Temperature:	-20 to 55°C (-4 to 131°F)			
Cleaning:	Water washdown			
Compliance				
Standards:	EN60947-5-1, EN1088, EN ISO 13849-1, ISO 14119			
Approvals/Listings:	CE marked for all applicable directives, UL and C-UL, DGUV			

Specifications are subject to change without notice.

Note: The safety contacts of the STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

Operation



Optional Slide Bolts

- Allows easy installation of switch on machine guards
- Actuator included (order switch separately)
- Integral handle included
- Metal is ideal for heavy doors; plastic is suitable for smaller and lighter doors
- Slotted hole in bolt permits attaching multiple padlocks
- Yellow color for easy recognition

Metal Slide Bolt

Plastic Slide Bolt

Alignment Guide

Optional stainless steel alignment guide aids actuator entry and is easily installed.

Flat Actuator

Available with and without rubber bushings.

90-Degree Actuator

Available with and without rubber bushings.

Optional Rear Release

- Allows manual rear release of a locked switch from inside a guarded area per ANSI/RIA R15.06
- May be installed on switch in conjunction with or without the use of a slide bolt
- Must use with Rear Release Switch Models only

Rear Release Actuator (Included with Rear Release Switches)

Rear Release T-Handle (Order separately)

Optional Key Release

A key release unit is easily attached to the TL4019 to provide emergency override of the switch locking mechanism by a qualified, responsible person.

Flexible 1 Actuator

15 degree flexibility may be adjusted with the set screw.

Flexible 2 Actuator

15 degree flexibility may adjusted with the set scre

Optional LED Lid Kit

Provides red and green LED indicators with user-configured operation.

Optional Interior Lever Kit

Use with metal rear release slide bolts.

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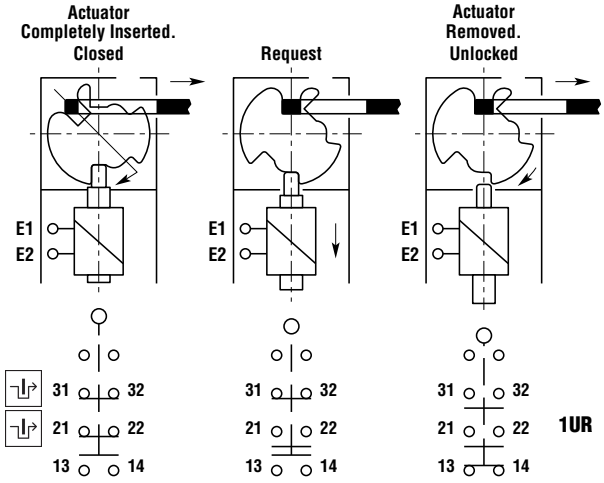
Operation (continued)

Contact Arrangements

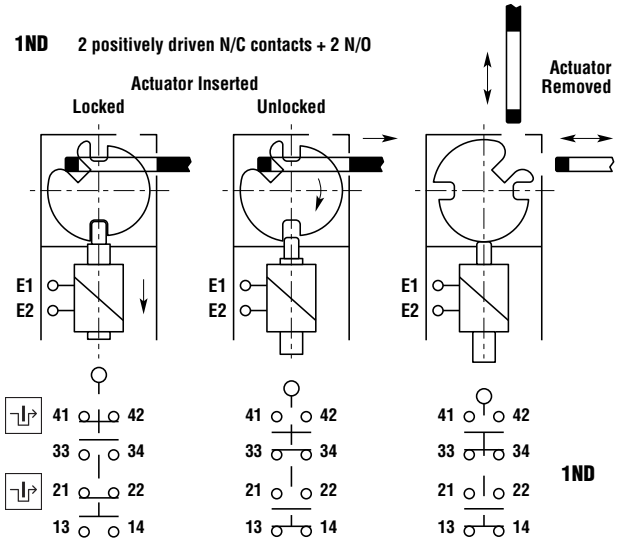
With Unlock Request Contact

1UR 1 positively driven N/C contact as door unlock request contact
1 positively driven N/C contact + 1 N/O (without door contact)



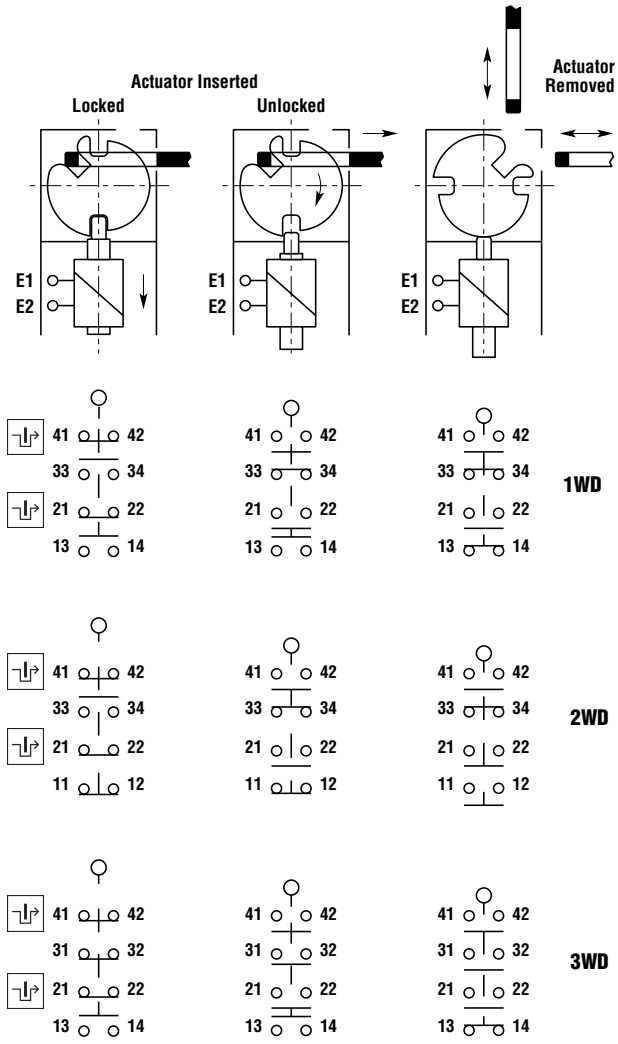
Without Door Contact

1ND 2 positively driven N/C contacts + 2 N/O



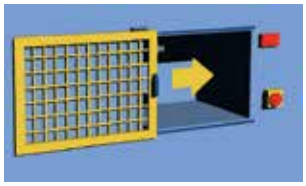
With Door Contact

1WD 2 positively driven N/C contacts + 1 N/O + 1 N/O as door contact
2WD 2 positively driven N/C contacts + 1 N/O + 1 N/C as door contact
3WD 2 positively driven N/C contacts + 1 N/C + 1 N/O as door contact



Applications

Typical applications are on sliding guard doors and swinging guard doors that must remain locked until a signal is applied to the internal solenoid that unlocks the guard door.



Application Monitoring Units

SR223SMT Timer Unit

Used with the TL4019 for machines with constant overrun. Gives a timed delay to the lock/release signal. Failsafe and adjustable to a range of times from 1.0 seconds up to 31 seconds.

SR125SMS45 Stop Motion Sensing Unit

Used with the TL4019 for machines with inconstant or variable overrun. Senses back EMF of AC or DC motors. Failsafe and adjustable to a range of 0.01 V to 0.10 V.

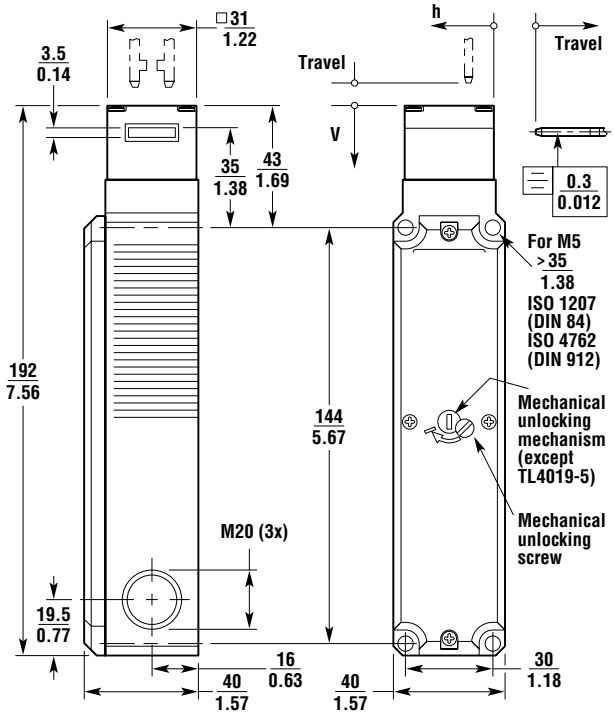
Safety Monitoring Relay Units

Safety monitoring relays ensure a maximum level of safety by monitoring all wiring in the safety circuit, including switches and contactors. Any fault and the power to the machine is switched off. A variety of safety monitoring relay units are available.

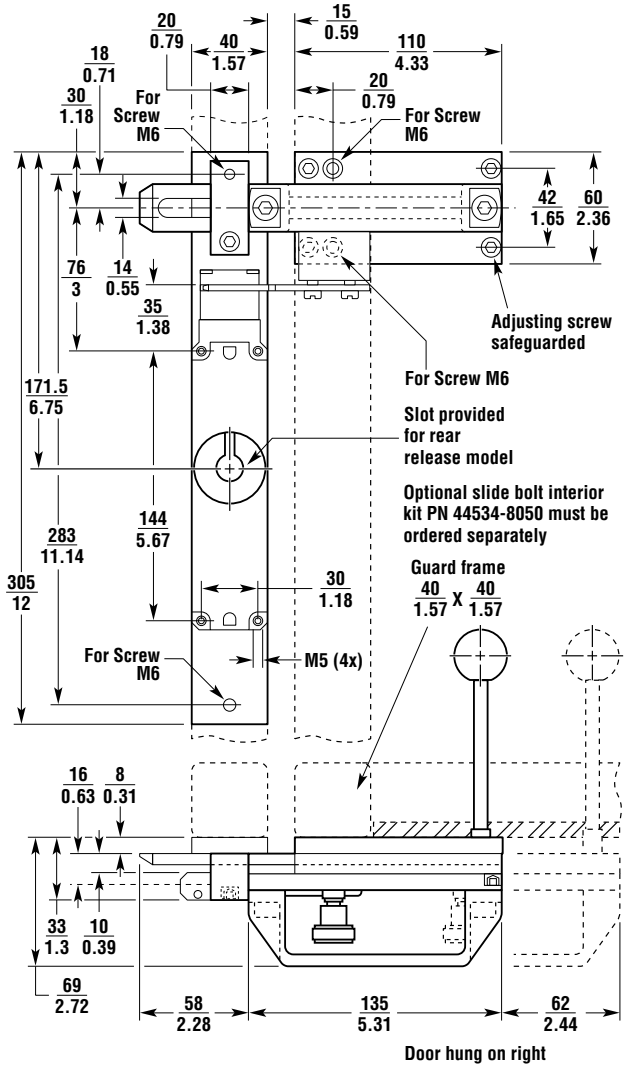
Dimensions

(mm/in.)

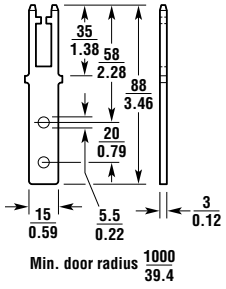
TL4019



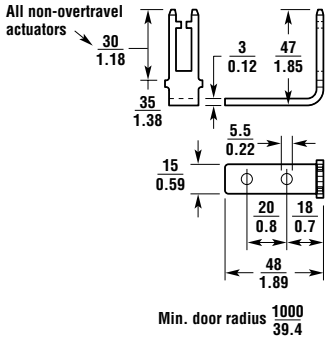
Optional Metal Slide Bolt for TL4019



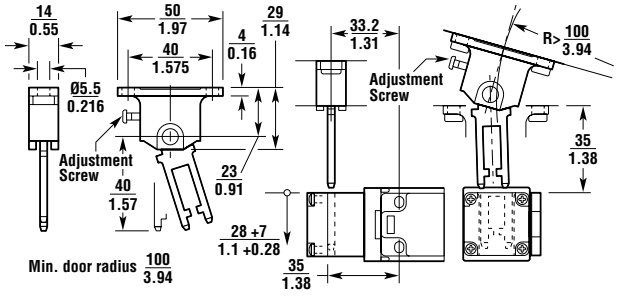
Overtravel
Flat Actuator



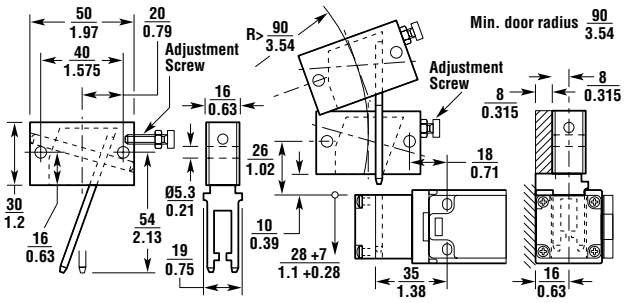
Overtravel
90-Degree Actuator



Flexible 1 Actuator



Flexible 2 Actuator



Ordering

Model	Solenoid	Contacts	Wiring Entry	Part No.
Power to Lock (without door contact)				
TL4019-20241TM (flat actuator)	24 VAC/DC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0030
TL4019-20241SM (90-degree actuator)	24 VAC/DC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0130
TL4019-20241F2M (flex 2 actuator)	24 VAC/DC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0230
TL4019-20241F1M (flex 1 actuator)	24 VAC/DC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0330
TL4019-21101TM (flat actuator)	110 VAC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0040
TL4019-21101SM (90-degree actuator)	110 VAC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0140
TL4019-21101F2M (flex 2 actuator)	110 VAC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0240
TL4019-21101F1M (flex 1 actuator)	110 VAC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0340
Power to Lock (with door contact)				
TL4019-40241TM (flat actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-0410
TL4019-40241SM (90-degree actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-0510
TL4019-40241F2M (flex 2 actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-0610
TL4019-40241F1M (flex 1 actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-1710
TL4019-41101TM (flat actuator)	110 VAC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-0420
TL4019-41101SM (90-degree actuator)	110 VAC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-0520
TL4019-41101F2M (flex 2 actuator)	110 VAC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-0620
TL4019-41101F1M (flex 1 actuator)	110 VAC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-1720
TL4019-40242TM (flat actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-0430
TL4019-40242SM (90-degree actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-0530
TL4019-40242F2M (flex 2 actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-0630
TL4019-40242F1M (flex 1 actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-1730
TL4019-41102TM (flat actuator)	110 VAC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-0440
TL4019-41102SM (90-degree actuator)	110 VAC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-0540
TL4019-41102F2M (flex 2 actuator)	110 VAC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-0640
TL4019-41102F1M (flex 1 actuator)	110 VAC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-1740
TL4019-40243TM (flat actuator)	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0450
TL4019-40243SM (90-degree actuator)	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0550
TL4019-40243F2M (flex 2 actuator)	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0650
TL4019-40243F1M (flex 1 actuator)	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-1750
TL4019-41103TM (flat actuator)	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0460
TL4019-41103SM (90-degree actuator)	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0560
TL4019-41103F2M (flex 2 actuator)	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0660
TL4019-41103F1M (flex 1 actuator)	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-1760
Power to Unlock (without door contact)				
TL4019-10241TM (flat actuator)	24 VAC/DC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0010
TL4019-10241SM (90-degree actuator)	24 VAC/DC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0110
TL4019-10241F2M (flex 2 actuator)	24 VAC/DC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0210
TL4019-10241F1M (flex 1 actuator)	24 VAC/DC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0310
TL4019-11101TM (flat actuator)	110 VAC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0020
TL4019-11101SM (90-degree actuator)	110 VAC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0120
TL4019-11101F2M (flex 2 actuator)	110 VAC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0220
TL4019-11101F1M (flex 1 actuator)	110 VAC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-0320
TL4019-10241SKM w/key (90-degree actuator)	24 VAC/DC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-1110
TL4019-11101SKM w/key (90-degree actuator)	110 VAC	2 N/C + 2 N/O	3 x M20 with NPT adapter	44534-1120
Power to Unlock (with door contact)				
TL4019-30241TM (flat actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-0050
TL4019-30241SM (90-degree actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-0150
TL4019-30241F2M (flex 2 actuator)	24 VAC/DC	2 N/C + 1 N/O + 1N/O	3 x M20 with NPT adapter	44534-0250
TL4019-30241F1M (flex 1 actuator)	24 VAC/DC	2 N/C + 1 N/O + 1N/O	3 x M20 with NPT adapter	44534-0350
TL4019-31101TM (flat actuator)	110 VAC	2 N/C + 1 N/O + 1N/O	3 x M20 with NPT adapter	44534-0060
TL4019-31101SM (90-degree actuator)	110 VAC	2 N/C + 1 N/O + 1N/O	3 x M20 with NPT adapter	44534-0160
TL4019-31101F2M (flex 2 actuator)	110 VAC	2 N/C + 1 N/O + 1N/O	3 x M20 with NPT adapter	44534-0260
TL4019-31101F1M (flex 1 actuator)	110 VAC	2 N/C + 1 N/O + 1N/O	3 x M20 with NPT adapter	44534-0360
TL4019-30242TM (flat actuator)	24 VAC/DC	2 N/C + 1 N/O + 1N/C	3 x M20 with NPT adapter	44534-0070
TL4019-30242SM (90-degree actuator)	24 VAC/DC	2 N/C + 1 N/O + 1N/C	3 x M20 with NPT adapter	44534-0170
TL4019-30242F2M (flex 2 actuator)	24 VAC/DC	2 N/C + 1 N/O + 1N/C	3 x M20 with NPT adapter	44534-0270
TL4019-30242F1M (flex 1 actuator)	24 VAC/DC	2 N/C + 1 N/O + 1N/C	3 x M20 with NPT adapter	44534-0370

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Ordering (continued)

Model	Solenoid	Contacts	Wiring Entry	Part No.
TL4019-31102TM (flat actuator)	110 VAC	2 N/C + 1 N/O + 1N/C	3 x M20 with NPT adapter	44534-0080
TL4019-31102SM (90-degree actuator)	110 VAC	2 N/C + 1 N/O + 1N/C	3 x M20 with NPT adapter	44534-0180
TL4019-31102F2M (flex 2 actuator)	110 VAC	2 N/C + 1 N/O + 1N/C	3 x M20 with NPT adapter	44534-0280
TL4019-31102F1M (flex 1 actuator)	110 VAC	2 N/C + 1 N/O + 1N/C	3 x M20 with NPT adapter	44534-0380
TL4019-30243TM (flat actuator)	24 VAC/DC	2 N/C + 1 N/C + 1N/O	3 x M20 with NPT adapter	44534-0090
TL4019-30243SM (90-degree actuator)	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0190
TL4019-30243F2M (flex 2 actuator)	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0290
TL4019-30243F1M (flex 1 actuator)	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0390
TL4019-31103TM (flat actuator)	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0400
TL4019-31103SM (90-degree actuator)	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0500
TL4019-31103F2M (flex 2 actuator)	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-0600
TL4019-31103F1M (flex 1 actuator)	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-1700
TL4019-30241SKM w/key (90-degree actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-1150
TL4019-31101SKM w/key (90-degree actuator)	110 VAC	2 N/C + 1 N/O +1 N/O	3 x M20 with NPT adapter	44534-1160
TL4019-30242SKM w/key (90-degree actuator)	24 VAC/DC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-1170
TL4019-31102SKM w/key (90-degree actuator)	110 VAC	2 N/C + 1 N/O +1 N/C	3 x M20 with NPT adapter	44534-1180
TL4019-30243SKM w/key (90-degree actuator)	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-1190
TL4019-31103SKM w/key (90-degree actuator)	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20 with NPT adapter	44534-1500
Power to Unlock (with unlock request contact) (mechanical unlocking is not available on these switches)				
TL4019-50241TM (flat actuator)	24 VAC/DC	1 N/C + 1 N/C + 1 N/O	3 x M20 with NPT adapter	44534-0470
TL4019-50241SM (90-degree actuator)	24 VAC/DC	1 N/C + 1 N/C + 1 N/O	3 x M20 with NPT adapter	44534-0570
TL4019-50241F2M (flex 2 actuator)	24 VAC/DC	1 N/C + 1 N/C + 1 N/O	3 x M20 with NPT adapter	44534-0670
TL4019-50241F1M (flex 1 actuator)	24 VAC/DC	1 N/C + 1 N/C + 1 N/O	3 x M20 with NPT adapter	44534-1770
Switch Only (no actuators or adapters included)				
Power to Unlock (without door contact)				
TL4019-10241	24 VAC/DC	2 N/C + 2 N/O	3 x M20	44534-2010
TL4019-11101	110 VAC	2 N/C + 2 N/O	3 x M20	44534-2020
Power to Unlock (with door contact)				
TL4019-30241	24 VAC/DC	2 N/C + 1 N/O + 1 N/O	3 x M20	44534-2050
TL4019-31101	110 VAC	2 N/C + 1 N/O + 1 N/O	3 x M20	44534-2060
TL4019-30242	24 VAC/DC	2 N/C + 1 N/O +1 N/C	3 x M20	44534-2070
TL4019-31102	110 VAC	2 N/C + 1 N/O +1 N/C	3 x M20	44534-2080
TL4019-30243	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20	44534-2090
TL4019-31103	110 VAC	2 N/C + 1 N/C + 1 N/O	3 x M20	44534-2100
Power to Unlock (with unlock request contact)				
TL4019-50241	24 VAC/DC	1 N/C + 1 N/C + 1 N/O	3 x M20	44534-2170
Power to Lock (without door contact)				
TL4019-20241	24 VAC/DC	2 N/C + 2 N/O	3 x M20	44534-2030
TL4019-21101	110 VAC	2 N/C + 2 N/O	3 x M20	44534-2040
Power to Lock (with door contact)				
TL4019-40241	24 VAC/DC	2 N/C + 1 N/O + 1 N/O	3 x M20	44534-2110
TL4019-41101	110 VAC	2 N/C + 1 N/O + 1 N/O	3 x M20	44534-2120
TL4019-40242	24 VAC/DC	2 N/C + 1 N/O +1 N/C	3 x M20	44534-2130
TL4019-41102	110 VAC	2 N/C + 1 N/O +1 N/C	3 x M20	44534-2140
TL4019-40243	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20	44534-2150
TL4019-41103	110 VAC	2 N/C + 1 N/C +1 N/O	3 x M20	44534-2160
Rear Release (no actuators or adapters included; rear release actuator included; order T-handle separately)				
Power to Unlock (without door contact)				
TL4019-10241RR	24 VAC/DC	2 N/C + 2 N/O	3 x M20	44534-3010
Power to Unlock (with door contact)				
TL4019-30241RR	24 VAC/DC	2 N/C + 1 N/O + 1 N/O	3 x M20	44534-3050
TL4019-30242RR	24 VAC/DC	2 N/C + 1 N/O +1 N/C	3 x M20	44534-3070
TL4019-30243RR	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20	44534-3090
Power to Lock (without door contact)				
TL4019-20241RR	24 VAC/DC	2 N/C + 2 N/O	3 x M20	44534-3030
Power to Lock (with door contact)				
TL4019-40241RR	24 VAC/DC	2 N/C + 1 N/O + 1 N/O	3 x M20	44534-3110
TL4019-40242RR	24 VAC/DC	2 N/C + 1 N/O +1 N/C	3 x M20	44534-3130
TL4019-40243RR	24 VAC/DC	2 N/C + 1 N/C +1 N/O	3 x M20	44534-3150

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Ordering (continued)

Accessories				Part No.
Standard Actuators				
Replacement flat actuator for TL4019				44534-0700
Replacement 90-degree actuator for TL4019				44534-0710
Replacement flex 2 actuator for TL4019				44534-0720
Replacement flex 1 actuator for TL4019				44534-0730
Standard Actuators with Rubber Bushing				
Replacement flat actuator RB for TL4019				44534-0740
Replacement 90-degree actuator RB for TL4019				44534-0750
Overtravel Actuators				
Replacement flat actuator OT for TL4019				44534-0701
Replacement 90-degree actuator OT for TL4019				44534-0711
Replacement flex 2 actuator OT for TL4019				44534-0721
Replacement flex 1 actuator OT for TL4019				44534-0731
Overtravel Actuators with Rubber Bushing				
Replacement flat actuator OTRB for TL4019				44534-0741
Replacement 90-degree actuator OTRB for TL4019				44534-0751
Slide Bolts				
Bolt for right-hung door for TL4019 with/without rear release (yellow metal)				44534-8130
Bolt for left-hung door for TL4019 with/without rear release (yellow metal)				44534-8140
Plastic slide bolt for right or left-hung door for TL4019 (yellow) (okay for rear release switches)				44534-8070
Slide bolt interior lever kit (use with rear release slide bolts only)				44534-8050
Rear release T-handle (use with rear release switches only)				44534-8060
Bracket for TL4019 (galvanized)				44534-8020
Handle without snap-in (use with 44534-8020 bracket) (galvanized)				44534-8000
Handle with snap-in (use with 44534-8020 bracket) (galvanized)				44534-8010
Miscellaneous				
Stainless steel alignment guide for TL4019 (must use with Overtravel Actuator)				44534-0780
Latch spring for TL4019 (provides greater retention force for actuator)				44534-0760
Lockout bar for TL4019 (prevents insertion of actuator into switch)				44534-0770
Key lock release for TL4019 (2 keys included) (Do not use with TL4019-5)				44534-0802
Spare keys for key lock above (44534-0802) for TL4019				44534-0812
Spare keys for key lock (44534-0800, no longer available)				44534-0810
Unique key lock release for TL4019 (2 unique keys included) (Do not use with TL4019-5)				44534-0820
Replacement head for TL4019				44534-0790
LED lid kit (for 24 VAC/DC switches only)				44534-0761